

AMENDMENT TO THE CLAIMS

1. (Currently Amended) A printing device with an electro-photographic print unit (30) to which a transfer medium (34) for transferring a toner powder to a substrate (13) in a transfer zone is assigned, wherein the substrate (13) can be conducted through the transfer zone by a transport system (10), wherein heat energy can be introduced into the substrate (13) by at least one heating element (24), and a cooling device (35) is assigned to the transfer medium (34) which removes heat from the transfer medium (34), the printing device comprising:

at a transfer zone formed with the substrate (13) the transfer medium (34) having a lower temperature at least in an area of the contact face than at a surface of the substrate (13);

the at least one heating element (23) arranged upstream of the transfer medium in a transport direction of the substrate (13), wherein a surface of the substrate (13) to be imprinted is heated by the at least one heating element to a predetermined temperature upstream from the transfer medium; and

the transfer medium (34) is one of a transfer roller or a transfer belt which contains at least a portion of the cooling device (35).

Serial No.: 10/519,766

2. (Previously Presented) The printing device in accordance with claim 1, wherein the cooling device (35) cools the transfer medium (34) to a temperature $\leq 60^{\circ}\text{C}$.

3. (Previously Presented) The printing device in accordance with claim 2, wherein the cooling device (35) cools the transfer medium (34) to a temperature $\leq 40^{\circ}\text{C}$.

4. (Previously Presented) The printing device in accordance with claim 3, wherein the toner transfer in the transfer zone is affected by at least one corona (12).

5. (Previously Presented) The printing device in accordance with claim 4, wherein the substrate (13) is placed on an electrically conductive base and with respect to a charge of the toner the base is charged with a reverse polarity.

6. (Previously Presented) The printing device in accordance with claim 5, wherein the substrate (13) is moved beyond the transfer medium (34) synchronously with respect to a circumferential speed of the transfer medium (34) by

Serial No.: 10/519,766

a transport system (10), and a charge with an opposite polarity relative to a second charge of the toner is applied to the transfer medium (34) in the transport system (10).

7. (Previously Presented) The printing device in accordance with claim 6, wherein on a surface which receives the toner powder the transfer medium (34) has an anti-adhesive layer (34.3), and the anti-adhesive layer (34.3) has a surface energy within a range of 15 mN/m to 30 mN/m.

8. (Currently Amended) The printing device in accordance with claim 7, wherein the substrate (13) is chargeable with heat energy by at least one heating element designed as at least one of an infrared radiator ~~and~~ or a hot air blower by an application of a flame.

9. (Canceled)

10. (Currently Amended) The printing device in accordance with claim [[9]] 8, wherein the heating element (24) heats a surface of the substrate (13) to a surface temperature range between 80°C and 200°C at least in certain areas of the surface.

Serial No.: 10/519,766

11. (Previously Presented) The printing device in accordance with claim 10, wherein the surface temperature of the substrate (13) is 100°C to 170°C at least in certain areas.

12. (Previously Presented) The printing device in accordance with claim 9, wherein a temperature sensor (21) is assigned to the substrate (13) and at least one of the heating element (24) and the transport system (10) is controlled by a control device (23) as a function of the signal emitted by the temperature sensor (21).

13. (Previously Presented) The printing device in accordance with claim 12, wherein a plurality of the temperature sensors (21) are arranged over an entire print width and a heating element (24) is assigned to each of the temperature sensors (21), and a heating output is separately controlled within zones over a print width.

14. (Currently Amended) The printing device in accordance with claim 13, wherein each of the temperature sensors (21) each is a pyrometer.

Serial No.: 10/519,766

15. (Currently Amended) The printing device in accordance with claim 14, wherein at least one liquid-cooled contact roller of the cooling device (35) ~~at least one of~~ rolls off on the transfer medium (34) ~~and or~~ a climate-controlled air flow is directed onto the surface of the transfer medium.

16. (Canceled)

17. (Currently Amended) The printing device in accordance with claim ~~[[16]]~~ 34, wherein the transform medium (34) is a transfer roller and has interior air cooling.

18. (Currently Amended) The printing device in accordance with claim ~~[[17]]~~ 15, wherein the cooling device (35) removes heat energy from the transfer medium (34) downstream of the transfer zone and upstream of ~~the~~ a photoconductor (32) of the print unit (30) in ~~[[a]]~~ the transport direction of the transfer medium (34).

Serial No.: 10/519,766

19. (Currently Amended) The printing device in accordance with claim ~~[[1]]~~ 34, wherein the cooling device (35) cools the transfer medium (34) to a temperature $\leq 40^{\circ}\text{C}$.

20. (Previously Presented) The printing device in accordance with claim 1, wherein the toner transfer in the transfer zone is affected by at least one corona (12).

21. (Previously Presented) The printing device in accordance with claim 1, wherein the substrate (13) is placed on an electrically conductive base and with respect to a charge of the toner the base is charged with a reverse polarity.

22. (Previously Presented) The printing device in accordance with claim 1, wherein the substrate (13) is moved beyond the transfer medium (34) synchronously with respect to a circumferential speed of the transfer medium (34) by a transport system (10), and a charge with an opposite polarity relative to a second charge of the toner is applied to the transfer medium (34) in the transport system (10).

23. (Previously Presented) The printing device in accordance with claim 1, wherein on a surface which receives the toner powder the transfer medium (34) has an anti-adhesive layer (34.3), and the anti-adhesive layer (34.3) has a surface energy within a range of 15 mN/m to 30 mN/m.

24. (Currently Amended) The printing device in accordance with claim 1, wherein the substrate (13) is chargeable with heat energy by at least one heating element designed as at least one of an infrared radiator, and a hot air blower, and or a blower by an application of a flame.

25. (Canceled)

26. (Previously Presented) The printing device in accordance with claim 1, wherein the heating element (24) heats a surface of the substrate (13) to a surface temperature range between 80°C and 200°C at least in certain areas of the surface.

27. (Currently Amended) The printing device in accordance with claim 1, wherein a temperature sensor (21) is assigned to the substrate (13) and

Serial No.: 10/519,766

at least one of the heating element (24) ~~and~~ or the transport system (10) is controlled by a control device (23) as a function of the signal emitted by the temperature sensor (21).

28. (Previously Presented) The printing device in accordance with claim 1, wherein a plurality of the temperature sensors (21) are arranged over an entire print width and a heating element (24) is assigned to each of the temperature sensors (21), and a heating output is separately controlled within zones over a print width.

29. (Currently Amended) The printing device in accordance with claim ~~[[1]]~~ 28, wherein each of the temperature sensors (21) arranged over an entire print width ~~each~~ is a pyrometer.

30. (Currently Amended) The printing device in accordance with claim 1, wherein at least one liquid-cooled contact roller of the cooling device (35) ~~at least one of~~ rolls off on the transfer medium (34) ~~and~~ or a climate-controlled air flow is directed onto the surface of the transfer medium.

31. (Currently Amended) The printing device in accordance with claim ~~[[1]]~~ 34, wherein the transfer medium (34) is one of a transfer roller ~~and~~ or a transfer belt which contains at least a portion of the cooling device (35).

32. (Currently Amended) The printing device in accordance with claim 1, wherein the cooling device (35) removes heat energy from the transfer medium (34) downstream of the transfer zone and upstream of ~~the~~ a photoconductor (32) of the print unit (30) in ~~[[a]]~~ the transport direction of the transfer medium (34).

33. (New) The printing device in accordance with claim 1, wherein the cooling device (35) removes heat energy from the transfer medium (34), which cools the toner powder to prevent the toner powder from adhering to the surface of the transfer medium after transfer to the substrate is completed.

34. (New) A printing device with an electro-photographic print unit, the printing device comprising:

a transfer medium for transferring a toner powder to a substrate in a transfer zone;

a transport system for conducting the substrate through the transfer zone;

a heating element arranged upstream of the transfer medium in a transport direction of the substrate, wherein the heating element introduces heat energy to the substrate upstream of the transfer medium;

a temperature sensor arranged between the heating element and the transfer medium for monitoring the temperature of the substrate; and

a cooling device is assigned to the transfer medium and removes heat from the transfer medium, wherein at the transfer zone formed with the substrate the transfer medium has a lower temperature at least in an area of the contact face than at a surface of the substrate.

35. (New) The printing device in accordance with claim 34, wherein the cooling device (35) removes heat energy from the transfer medium (34), which cools the toner powder to prevent the toner powder from adhering to the surface of the transfer medium after transfer to the substrate is completed.